

**INF3705**

October/November 2018

**Advanced Systems Development**

Duration 2 Hours

100 Marks

**EXAMINERS**

FIRST

SECOND

EXTERNAL

PROF M LOOCK

PROF A COLEMAN

PROF HS VENTER

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**Closed book examination**

**This examination question paper remains the property of the University of South Africa and may not be removed from the examination venue**

This paper consists of 3 pages

**INSTRUCTIONS**

- 1 All answers must be written in the answer book provided
- 2 Number your answers and label your rough work clearly
- 3 The mark for each question is given next to the question
- 4 Marks are awarded for part of an answer, so do whatever you are able to in each question

**GOOD LUCK!**

**[TURN OVER]**

**Question 1****08 marks**

Name and explain the four (4) essential attributes of good software, as discussed in your prescribed work

**Question 2****06 marks**

Discuss why it is important to make a distinction between developing the user requirements and developing system requirements in the requirements engineering process

**Question 3****07 marks**

Explain why design conflicts might arise when designing an architecture for which both availability and security requirements are the most important non-functional requirements

**Question 4****06 marks**

You have been asked to prepare and deliver a presentation to a nontechnical manager to justify the hiring of a system architect for a new project. Write a short summary, describing the key points in your presentation in which you explain the importance of software architecture

**Question 5****09 marks**

A small company A has developed a specialized product that it configures specially for each customer. New customers usually have specific requirements to be incorporated into their system, and they pay for these to be developed. Company A has an opportunity to bid for a new contract, which would more than double its customer base. The new customer also wishes to be involved in the configuration of the system. Explain why, in these circumstances, it might be a good idea for Company A, owning the software, to make it open source.

**Question 6****15 marks**

Members of your software development team want to know the principles that agile methods are based on. Explain five (5) principles of agile methods to the team members.

**Question 7****08 marks**

What is regression testing? Explain how the use of automated tests and a testing framework such as JUnit simplifies regression testing. Also, explain why testing can only detect the presence of errors, not their absence.

**[TURN OVER]**

**Question 8****11 marks**

Briefly describe the three main types of software maintenance. Why is it sometimes difficult to distinguish between them?

**Question 9****15 marks**

List and discuss 5 of the 6 benefits of software reuse and explain why the expected lifetime of software should be considered when planning reuse.

**Question 10****15 marks**

What is a workflow? List and explain the key stages in the process of system construction by composition.